

Modify Bearer Request Support

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Feature Summary and Revision History

Summary Data

Table 1: Summary Data

Applicable Product(s) or Functional Area	cnSGW-C
Applicable Platform(s)	SMI
Feature Default Setting	Enabled - Always-on
Related Documentation	Not Applicable

Revision History

Revision Details	Release
First introduced.	2020.03.0

Feature Description

cnSGW-C supports the MBR service request from MME to change the UE state from IDLE to ACTIVE. cnSGW-C supports the following service requests:

- UE-triggered service request without PGW interaction
- UE-triggered service request with PGW interaction

How it Works

This section describes how this feature works.

The cnSGW-C performs the following actions while processing the UE-triggered service request:

- Sends the Sx Modification Request message to the UPF to:
  - Mark downlink Forwarding Action Rule (FAR) as forward.
  - Update the S1 eNodeB-F TEID information to UPF sends the downlink packets to eNodeB.
- After receiving the Sx Modify Response message from the UPF, cnSGW-C:
  - Sends the Modify Bearer Response message to MME.
  - Checks User Location Information (ULI) or UE time zone. For any change in the time zone, it sends Modify Bearer Request to PGW to update the TAI. The UE-triggered service request with PGW interaction request only considers ULI or UE time zone check.

Call Flows

This section describes the key call flows for this feature.

UE-Triggered Service Request without PGW Interaction Call Flow

This section describes the UE-Triggered Service Request without PGW Interaction call flow.

Figure 1: UE Triggered Service Request without PGW Interaction Call Flow

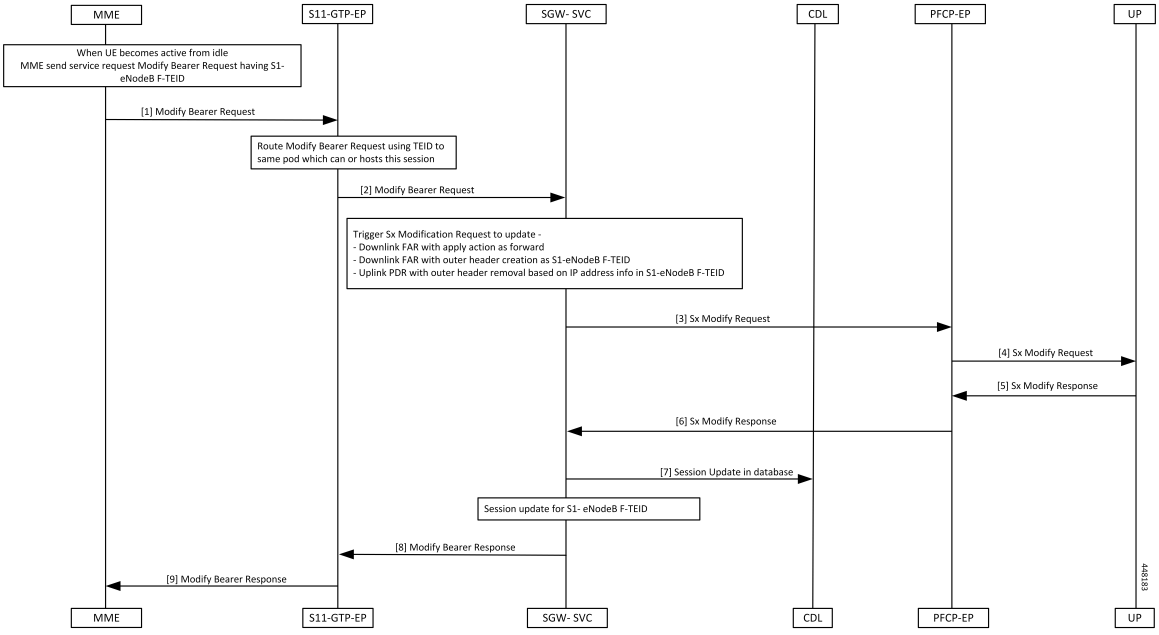


Table 2: UE Triggered Service Request without PGW Interaction Call Flow Description

Step	Description
1	The MME sends the Modify Bearer Request message with s1-eNodeB F-TEID to cnSGW-C when the UE changes from IDLE to ACTIVE state.
2	The S11-GTP-EP decodes the UDP message and converts it into gRPC message. This gRPC message is sent to the SGW-SVC pod (which can handle this UE session) using TEID.
3	The SGW-SVC pod finds the subscriber context using the local ingress TEID. The SGW-SVC pod sends the Modify Bearer Request content and sends Sx Modify Request to PFCP-EP.
4	The PFCP-EP sends Sx Modify Request message to UPF through the UDP proxy.
5	The UPF process the Sx Modify Request message and sends Sx Modify Response message to PFCP-EP.
6	The PFCP-EP sends the Sx Modify Response message to SGW-SVC pod.
7	The SGW-SVC pod chnages PDN into CONNECTED state and sends session update to CDL. The CDL module updates the information in the database.
8	The SGW-SVC pod sends the Modify Bearer Response message to the S11-GTP-EP.
9	The S11-GTP-EP sends the Modify Bearer Response message to MME. The MME processes the Modify Bearer Response message.

UE-Triggered Service Request with PGW Interaction Call Flow

This section describes the UE-Triggered Service Request with PGW Interaction call flow.

Figure 2: UE-Triggered Service Request with PGW Interaction Call Flow

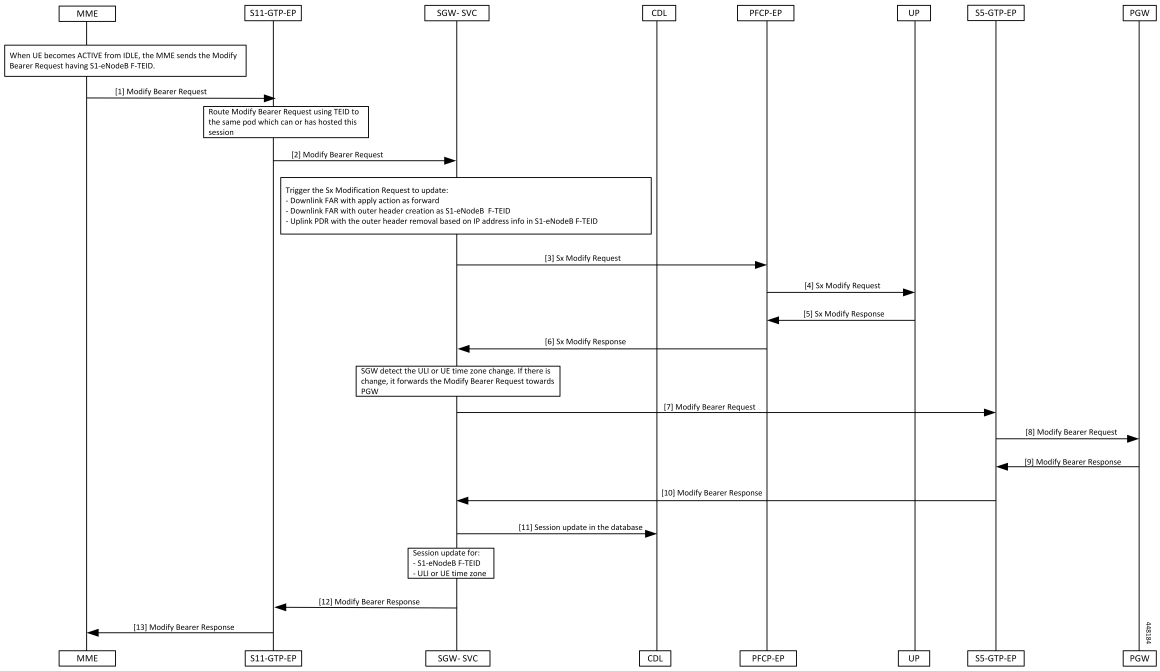


Table 3: UE-Triggered Service Request with PGW Interaction Call Flow description

Step	Description
1	The MME sends the Modify Bearer Request with s1-eNodeB F-TEID to cnSGW-C when the UE changes from the IDLE to ACTIVE state.
2	The S11-GTP-EP decodes the UDP message and converts it into the gRPC message. This gRPC message is sent to the SGW-Service pod, which handles the UE session using TEID.
3	The SGW-Service pod finds the subscriber context using the local ingress TEID. It validates the Modify Bearer Request content and sends the Sx Modify Request to PFCP-EP.
4	The PFCP-EP sends the Sx Modify Request to the UPF through the UDP proxy.
5	The UPF1 processes the Sx Modify Request and sends the Sx Modify Response message.
6	The PFCP-EP sends the Sx Modify Response message to the SGW-Service pod.
7	The SGW-Service pod detects ULI or UE time zone change and sends the Modify Bearer Request message to S5-GTP-EP.
8	The S5-GTP-EP sends the Modify Bearer Request message to the PGW.
9	The PGW processes the Modify Bearer Request message and sends the Modify Bearer Response message.
10	The S5-GTP-EP sends the Modify Bearer Response message to the SGW-Service pod.

Step	Description
11	The SGW-Service pod moves PDN into the CONNECTED state and sends the update to CDL. The CDL module updates the information in the database.
12	The SGW-Service pod sends the Modify Bearer Response message to the S11-GTP-EP.
13	The S11-GTP-EP sends the Modify Bearer Response message to the MME. The MME processes the Modify Bearer Response message.